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In accordance with the present invention, an apparatus and method are provided for preparing a substrate for adhering a material onto the surface of the substrate. The surface of the substrate to be prepared is exposed to electromagnetic radiation comprising ultra-violet radiation, whereby the substrate surface is decontaminated and/or modified by exposure to the ultra-violet radiation. Also disclosed is the use of an electro-ionization device, such as a Corona discharge device, and/or an infra-red radiation source in conjunction with electromagnetic radiation to modify the surface of the substrate to be prepared. Additionally, the use of gaseous components to modify the chemical functionalities on the substrate's surface is described. The invention has diverse applications, including, shoe fabrication, aircraft and space vehicle manufacture, automobile manufacturing and deposition of biochemical samples onto microarray well-plates.